

B. In the claims:

Please cancel claims 61-63 that have been previously withdrawn from consideration. Applicant reserves the right to pursue the subject matter of these claims in one or more additional applications.

Please amend claims 1, 14, 42 and 52, and add new claims 64-90 as follows:

1. (Currently Amended) A lens assembly, comprising:

a moving magnet component;

a stationary coil component; and

a moving lens component coupled to said moving magnet component, said moving magnet component configured to move said moving lens component relative to said stationary coil component;

wherein said stationary coil component is disposed around said moving lens component.
2. (Original) The lens assembly of claim 1, wherein said moving magnet component comprises a permanent magnet.
3. (Original) The lens assembly of claim 2, further comprising a lens guidance mechanism coupled to said moving lens component.

4. (Original) The lens assembly of claim 3, further comprising a damping mechanism coupled to said moving lens component.
5. (Original) The lens assembly of claim 3, wherein said lens guidance mechanism comprises one or more guide shaft mounting members movably received by one or more guide shafts.
6. (Original) The lens assembly of claim 3, wherein said lens guidance mechanism comprises one or more ferromagnetic fluid bearings.
7. (Original) The lens assembly of claim 2, further comprising a damping mechanism coupled to said moving lens component.
8. (Original) The lens assembly of claim 7, wherein said damping mechanism comprises one or more spring members.
9. (Original) The lens assembly of claim 7, wherein said damping mechanism comprises one or more ferromagnetic fluid bearings.
10. (Original) The lens assembly of claim 2, wherein said moving lens comprises a moving focus lens or a moving zoom lens.
11. (Original) The lens assembly of claim 2, wherein said lens assembly is configured to be positioned in a linear light path of an optical block.
12. (Original) The lens assembly of claim 11, wherein said optical block comprises a folded light path optical block.

13. (Original) The lens assembly of claim 12, wherein said optical block comprises a closed circuit television optical block.

14. (Currently Amended) An actuatable lens assembly, comprising:

a voice coil motor assembly, said voice coil motor assembly comprising at least one stationary coil component and at least one moving magnet component;
and

a moving lens coupled to said at least one moving magnet component so that said moving lens moves with said moving magnet component relative to said stationary coil component;

wherein said stationary coil component is disposed around said moving lens.

15. (Original) The lens assembly of claim 14, wherein said moving magnet component comprises a permanent magnet.

16. (Original) The lens assembly of claim 15, further comprising a lens assembly housing, said stationary coil component being fixedly coupled to said lens assembly housing.

17. (Original) The lens assembly of claim 16, further comprising a lens guidance mechanism coupled between said lens assembly housing and said moving lens, said lens guidance mechanism being configured to guide said moving lens in a reciprocal linear path along the longitudinal axis of said lens assembly.

18. (Original) The lens assembly of claim 16, wherein said lens assembly housing comprises a lens barrel concentrically disposed around said moving lens, and wherein said stationary coil component comprises a spirally wound conductor coil disposed adjacent the inner side of said lens barrel.

19. (Original) The lens assembly of claim 18, wherein said stationary coil component is thermally coupled to said inner side of said lens barrel; and wherein said lens barrel comprises a thermally conductive material.

20. (Original) The lens assembly of claim 17, further comprising a damping mechanism configured to dampen movement of said moving lens component relative to said lens assembly housing.

21. (Original) The lens assembly of claim 15, wherein said moving lens comprises a moving focus lens or a moving zoom lens.

22. (Original) The lens assembly of claim 15, wherein said lens assembly is configured to be positioned in a linear light path of an optical block.

23. (Original) The lens assembly of claim 22, wherein said optical block comprises a folded light path optical block.

24. (Original) The lens assembly of claim 22, wherein said optical block comprises a closed circuit television optical block.

25. (Original) An actuatable lens assembly, comprising:

a voice coil motor assembly, said voice coil motor assembly comprising at least one stationary coil component and at least one moving magnet component; and

a moving lens coupled to said at least one moving magnet component so that said moving lens moves with said moving magnet component relative to said stationary coil component; and

a lens assembly housing, said stationary coil component being fixedly coupled to said lens assembly housing, said moving lens being movably disposed within said lens assembly housing so that said moving lens moves with said moving magnet component relative to said lens assembly housing;

a lens guidance mechanism coupled between said lens assembly housing and said moving lens, said lens guidance mechanism being configured to guide said moving lens in a reciprocal linear path along the longitudinal axis of said lens assembly; and

a damping mechanism configured to dampen movement of said moving lens component relative to said lens assembly housing.

26. (Original) The lens assembly of claim 25, wherein said moving magnet component comprises a permanent magnet.

27. (Original) The lens assembly of claim 26, wherein said lens guidance mechanism comprises one or more guide shafts fixedly coupled to said lens assembly housing,; and one or more guide shaft mounting members fixedly coupled to said moving lens component, each of said one or more guide shaft mounting members being movably received by one of said one or more guide shafts.

28. (Original) The lens assembly of claim 26, wherein said lens guidance mechanism comprises one or more guide shafts fixedly coupled to said moving lens component; and one or more guide shaft mounting members fixedly coupled to said lens assembly housing, each of said one or more of said guide shaft mounting members being slidably received by one of said one or more guide shafts.

29. (Original) The lens assembly of claim 26, wherein said lens guidance mechanism comprises one or more ferromagnetic fluid bearings concentrically disposed in operative relationship between said lens assembly housing and said moving lens component.

30. (Original) The lens assembly of claim 29, wherein at least one of said ferromagnetic fluid bearings comprises a pocket of ferromagnetic fluid positioned adjacent a magnetic field return path between said stationary coil component and said moving magnet components so as to contain the ferromagnetic fluid within said pocket.

31. (Original) The lens assembly of claim 26, wherein said lens assembly housing comprises a lens barrel concentrically disposed around said moving lens, and wherein said stationary coil component comprises a spirally wound conductor coil disposed adjacent the inner side of said lens barrel.

32. (Original) The lens assembly of claim 31, wherein said stationary coil component is thermally coupled to said inner side of said lens barrel; and wherein said lens barrel comprises a thermally conductive material.

33. (Original) The lens assembly of claim 31, wherein said moving magnet component comprises a magnetic tube concentrically disposed between said stationary coil component and said moving lens.

34. (Original) The lens assembly of claim 33, further comprising a lens container disposed within and coupled to said magnetic tube so that said lens container moves with said moving magnet component relative to said lens assembly housing, said lens container supporting said moving lens in a position centered about the longitudinal axis of said lens assembly.

35. (Original) The lens assembly of claim 26, wherein said damping mechanism comprises one or more spring members operatively coupled between said moving lens component and stationary components of said lens assembly.

36. (Original) The lens assembly of claim 35, wherein said damping mechanism comprises a circular spring member coupled between said lens assembly housing and said moving lens.

37. (Original) The lens assembly of claim 26, wherein said damping mechanism comprises one or more ferromagnetic fluid bearings concentrically disposed in operative relationship between said lens assembly housing and said moving lens component

38. (Original) The lens assembly of claim 26, wherein said moving lens comprises a moving focus lens or a moving zoom lens.

39. (Original) The lens assembly of claim 26, wherein said lens assembly is configured to be positioned in a linear light path of an optical block.

40. (Original) The lens assembly of claim 39, wherein said optical block comprises a folded light path optical block.

41. (Original) The lens assembly of claim 39, wherein said optical block comprises a closed circuit television optical block.

42. (Currently Amended) An optical block assembly, comprising one or more actuatable lens assemblies operatively disposed in a linear light path of said optical block, each of said one or more actuatable lens assemblies comprising:

a moving magnet component;

a stationary coil component; and

a moving lens component coupled to said moving magnet component;

wherein said stationary coil component is disposed around said moving lens component.

43. (Original) The optical block assembly of claim 42, wherein said moving magnet component comprises a permanent magnet.

44. (Original) The optical block assembly of claim 43, wherein said one or more actuatable lens assemblies each comprise either a moving focus lens or a moving zoom lens.

45. (Original) The optical block assembly of claim 44, wherein said actuatable lens assembly further comprises a lens guidance mechanism coupled to said moving lens component, said lens guidance mechanism being configured to guide said moving lens in

a reciprocal linear path along the longitudinal axis of said linear light path of said optical block.

46. (Original) The optical block assembly of claim 45, wherein said actuatable lens assembly further comprises a damping mechanism coupled to said moving lens component.

47. (Original) The optical block assembly of claim 45, wherein said actuatable lens assembly further comprises one or more ferromagnetic fluid bearings.

48. (Original) The optical block assembly of claim 44, wherein said optical block assembly comprises at least two of said actuatable lens assemblies, a first one of said at least two actuatable lens assemblies comprising a moving focus lens, and a second one of said at least two actuatable lens assemblies comprising a moving zoom lens.

49. (Original) The optical block assembly of claim 48, wherein said optical block comprises a folded light path optical block.

50. (Original) The optical block assembly of claim 49, wherein said optical block comprises a closed circuit television optical block.

51. (Original) The optical block assembly of claim 48, further comprising a computer control mechanism coupled to each of said first or second actuatable lens assemblies, said computer control mechanism configured to control movement of said moving focus lens of said first actuatable lens assembly in tandem with movement of said moving zoom lens of said second actuatable lens assembly such that the movement speed of said moving focus lens equals the movement speed of said moving zoom lens.

52. (Currently Amended) A method of moving a lens disposed within a lens assembly, comprising:

providing a lens assembly, said lens assembly comprising:

a moving magnet component,

a stationary coil component, and

a moving lens component coupled to said moving magnet component, said moving magnet component configured to move said moving lens component relative to said stationary coil component and said stationary coil component being disposed around said moving lens; [[,]] and

moving said moving lens component by generating current within said stationary coil component.

53. (Original). The method of claim 52, wherein said moving magnet component comprises a permanent magnet.

54. (Original) The method of claim 53, further comprising guiding movement of said moving lens component using a lens guidance mechanism coupled to said moving lens component.

55. (Original) The method of claim 54, further comprising damping movement of said moving lens component using a damping mechanism coupled to said moving lens component.

56. (Original) The method of claim 53, wherein said moving lens comprises a moving focus lens or a moving zoom lens.

57. (Original) The method of claim 53, wherein said lens assembly is positioned in a linear light path of an optical block.

58. (Original) The method of claim 57, wherein said optical block comprises a folded light path optical block.

59. (Original) The method of claim 53, wherein said optical block comprises a closed circuit television optical block.

60. (Original) The method of claim 57, further comprising controlling said movement of said moving lens component in tandem with controlling movement of a different moving lens component of a different lens assembly of said optical block such that the movement speed of said moving lens component equals the movement speed of said different moving lens assembly.

61-63 (Cancelled).

64. (New) A lens assembly, comprising:

a moving magnet component;

a stationary coil component;

a moving lens component coupled to said moving magnet component, said moving magnet component configured to move said moving lens component relative to said stationary coil component; and

at least one of:

a lens guidance mechanism coupled to said moving lens component, said lens guidance mechanism comprising one or more ferromagnetic fluid bearings, or

a damping mechanism coupled to said moving lens component, said damping mechanism comprising one or more ferromagnetic fluid bearings, or

a combination thereof.

65. (New) The lens assembly of claim 64, wherein said lens assembly comprises a lens guidance mechanism coupled to said moving lens component, and wherein said lens guidance mechanism comprises one or more ferromagnetic fluid bearings.

66. (New) The lens assembly of claim 64, wherein said lens assembly comprises a damping mechanism coupled to said moving lens component, and wherein said damping mechanism comprises one or more ferromagnetic fluid bearings.

67. (New) A lens assembly, comprising:

a moving magnet component;

a stationary coil component; and

a moving lens component coupled to said moving magnet component, said moving magnet component configured to move said moving lens component relative to said stationary coil component;

wherein said lens assembly is configured to be positioned in a linear light path of a folded light path optical block.

68. (New) The lens assembly of claim 67, wherein said optical block comprises a closed circuit television optical block.

69. (New) An actuatable lens assembly, comprising:

a voice coil motor assembly, said voice coil motor assembly comprising at least one stationary coil component and at least one moving magnet component;

a moving lens coupled to said at least one moving magnet component so that said moving lens moves with said moving magnet component relative to said stationary coil component; and

at least one of:

a lens guidance mechanism coupled to said moving lens, said lens guidance mechanism comprising one or more ferromagnetic fluid bearings, or

a damping mechanism coupled to said moving lens, said damping mechanism comprising one or more ferromagnetic fluid bearings, or

a combination thereof.

70. (New) The lens assembly of claim 69, wherein said lens assembly comprises a lens guidance mechanism coupled to said moving lens component, and wherein said lens guidance mechanism comprises one or more ferromagnetic fluid bearings.

71. (New) The lens assembly of claim 69, wherein said lens assembly comprises a damping mechanism coupled to said moving lens component, and wherein said damping mechanism comprises one or more ferromagnetic fluid bearings.

72. (New) An actuatable lens assembly, comprising:

a voice coil motor assembly, said voice coil motor assembly comprising at least one stationary coil component and at least one moving magnet component;
and

a moving lens coupled to said at least one moving magnet component so that said moving lens moves with said moving magnet component relative to said stationary coil component;

wherein said lens assembly is configured to be positioned in a linear light path of a folded light path optical block.

73. (New). The lens assembly of claim 72, wherein said optical block comprises a closed circuit television optical block.

74. (New) An optical block assembly, comprising one or more actuatable lens assemblies operatively disposed in a linear light path of said optical block, each of said one or more actuatable lens assemblies comprising:

a moving magnet component;

a stationary coil component; and

a moving lens component coupled to said moving magnet component;

wherein said actuatable lens assembly further comprises one or more ferromagnetic fluid bearings.

75. (New) An optical block assembly, comprising one or more actuatable lens assemblies operatively disposed in a linear light path of said optical block, each of said one or more actuatable lens assemblies comprising:

a moving magnet component;

a stationary coil component; and

a moving lens component coupled to said moving magnet component;

wherein said optical block assembly comprises at least two of said actuatable lens assemblies, a first one of said at least two actuatable lens assemblies comprising a moving focus lens, and a second one of said at least two actuatable lens assemblies comprising a moving zoom lens.

76. (New) The optical block assembly of claim 75, further comprising a computer control mechanism coupled to each of said first or second actuatable lens assemblies, said computer control mechanism configured to control movement of said moving focus lens of said first actuatable lens assembly in tandem with movement of said moving zoom lens of said second actuatable lens assembly such that the movement speed of said moving focus lens equals the movement speed of said moving zoom lens.

77. (New) An optical block assembly, comprising one or more actuatable lens assemblies operatively disposed in a linear light path of said optical block, each of said one or more actuatable lens assemblies comprising:

a moving magnet component;

a stationary coil component; and

a moving lens component coupled to said moving magnet component;

wherein said optical block comprises a folded light path optical block.

78. (New) The optical block assembly of claim 77, wherein said optical block comprises a closed circuit television optical block.

79. (New) A method of moving a lens disposed within a lens assembly, comprising:

providing a lens assembly, said lens assembly comprising:

a moving magnet component,

a stationary coil component,

a moving lens component coupled to said moving magnet component, said moving magnet component configured to move said moving lens component relative to said stationary coil component, and

at least one of:

a lens guidance mechanism coupled to said moving lens, said lens guidance mechanism comprising one or more ferromagnetic fluid bearings, or

a damping mechanism coupled to said moving lens, said damping mechanism comprising one or more ferromagnetic fluid bearings, or

a combination thereof; and

moving said moving lens component by generating current within said stationary coil component.

80. (New) The method of claim 79, wherein said lens assembly comprises a lens guidance mechanism coupled to said moving lens component, and wherein said lens guidance mechanism comprises one or more ferromagnetic fluid bearings.

81. (New) The method of claim 80, wherein said lens assembly comprises a damping mechanism coupled to said moving lens component, and wherein said damping mechanism comprises one or more ferromagnetic fluid bearings.

82. (New) A method of moving a lens disposed within a lens assembly, comprising:

providing a lens assembly, said lens assembly comprising:

a moving magnet component,

a stationary coil component, and

a moving lens component coupled to said moving magnet component, said moving magnet component configured to move said moving lens component relative to said stationary coil component; and

moving said moving lens component by generating current within said stationary coil component;

wherein said lens assembly is positioned in a linear light path of a folded light path optical block.

83. (New) The method of claim 82, wherein said optical block comprises a closed circuit television optical block.

84. (New) A method of moving a lens disposed within a lens assembly, comprising:

providing a lens assembly, said lens assembly comprising:

a moving magnet component,

a stationary coil component, and

a moving lens component coupled to said moving magnet component, said moving magnet component configured to move said moving lens component relative to said stationary coil component; and

moving said moving lens component by generating current within said stationary coil component;

wherein said lens assembly is positioned in a linear light path of an optical block;
and

wherein said method further comprises controlling said movement of said moving lens component in tandem with controlling movement of a different moving lens component of a different lens assembly of said optical block such that the movement speed of said moving lens component equals the movement speed of said different moving lens assembly.

85. (New) A video lens assembly, comprising:

a moving magnet component;

a stationary coil component;

a moving video lens component coupled to said moving magnet component, said moving magnet component configured to move said moving video lens component relative to said stationary coil component for focus or zoom operations; and

a damping mechanism coupled to said moving video lens component and configured to dampen focus or zoom movement of said moving video lens component.

86. (New) The lens assembly of claim 85, wherein said damping mechanism comprises one or more spring members.

87. (New) The lens assembly of claim 85, wherein said damping mechanism comprises one or more ferromagnetic fluid bearings.

88. (New) A method of moving a lens disposed within a video lens assembly, comprising:

providing a video lens assembly, said video lens assembly comprising:

a moving magnet component,

a stationary coil component,

a moving video lens component coupled to said moving magnet component, said moving magnet component configured to move said moving video lens component relative to said stationary coil component for focus or zoom operations, and

a damping mechanism coupled to said moving video lens component and configured to dampen focus or zoom movement of said moving video lens component;

moving said moving video lens component by generating current within said stationary coil component; and

damping focus or zoom movement of said moving video lens component using a damping mechanism coupled to said moving video lens component.

89. (New) The method of claim 88, wherein said damping mechanism comprises one or more spring members.

90. (New) The method of claim 88, wherein said damping mechanism comprises one or more ferromagnetic fluid bearings.